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Information protection based on nanosecond synchronization of time scales in meteor burst channel

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Abstract

The work is dedicated to metrological validation of meteor-based method of information protection-new technique for distant encryption key generation which might be capable of providing thorough security. The method is based on high-precision phase measurements of radio signal propagation time performed simultaneously in both forward and backward directions. These measurements are possible only if the communicants' time scales are synchronized with nanosecond precision, which is shown to be possible by meteor time transfer. In order to account for short-term instability of quantum frequency standards, considering irregularity and variable precision of meteor measurements, we use optimal linear filtration and experimental measurement analogue, based on the results of meteor synchronization experiment conducted on the Mendeleevo(Moscow)-Kazan radio path. The possibility of using a meteor channel in two modes for remote time scale synchronization and encryption key generation is shown together with estimates for the capacity of this procedure. © 2008 MAIK Nauka.

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